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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

TOP2121 – OBJECT-ORIENTED PROGRAMMING

(All sections / Groups)

18 OCTOBER 2018
2.30p.m – 4.30p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 7 pages, including the cover page, with **FOUR** questions only.
2. Attempt all **FOUR** questions.
3. All questions carry equal marks and the distribution of the marks for each question is given.
4. Please write all your answers in the answer booklet provided.

Question 1

- (a) As a popular object-oriented programming language, Java has a couple of important object-oriented properties. Describe **THREE (3)** object-oriented properties provided by a Java class.

[3 marks]

- (b) Andy compiled a Java source code `finalExam.java` successfully on his Windows operating system. Describe in detail to Andy how to execute the compiled program on the Linux server without recompilation.

[4 marks]

- (c) Considering these requirements on a Java class: accessible by other classes and subclasses but not classes reside in another folder. Which access modifier should be used for the class? Justify your any answer with any **THREE (3)** reasons.

[3 marks]

Continued...

Question 2

- (a) Identify **THREE (3)** errors in the Java code as shown in Figure 1.

```
import java.applet.*;
public class OOP extends Applet {
    public void paint(g) {
        Font f=new Font("Times Roman",Font.BOLD,20);
        g.setFont(f);
        g.setColor(C.yellow);
        g.drawString("Welcome to the world of JavaApplets",20,40);
        g.drawString("Today is "+ new Date(),20,120);
    }
}
```

Figure 1. Erroneous Java Code.

[3 marks]

- (b) All Java programs can be classified as Applications and Applets. In terms of execution, can you construct the main difference between a Java application and a Java Applet? Justify your answer.

[3 marks]

- (c) Draw the output of the Java code displayed in Figure 2.

```
import java.awt.*;
import java.applet.*;
import java.awt.event.*;
public class Exam extends Applet{
    Button b1=new Button("Q1");
    Button b2=new Button("Q2");
    Label l1=new Label("Student ID: ");
    TextField tf = new TextField("12345678");

    public void init(){
        add(l1);
        add(tf);
        add(b1);
        add(b2);
    }
}
```

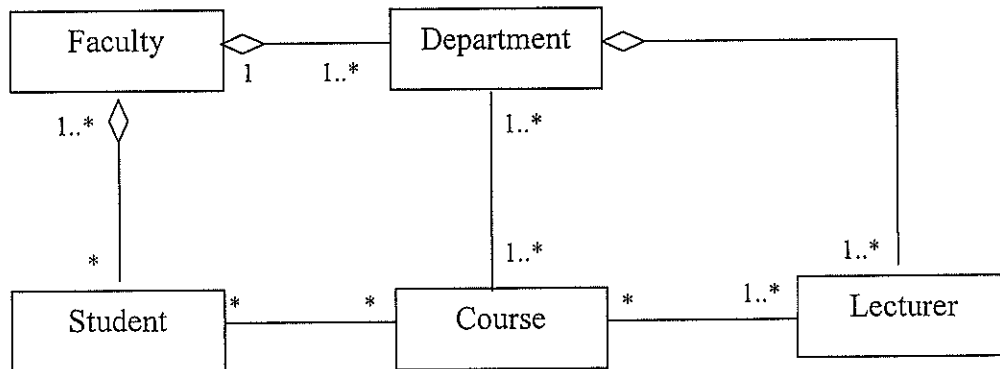
Figure 2. A Java Applet Code.

[4 marks]

Continued...

Question 3

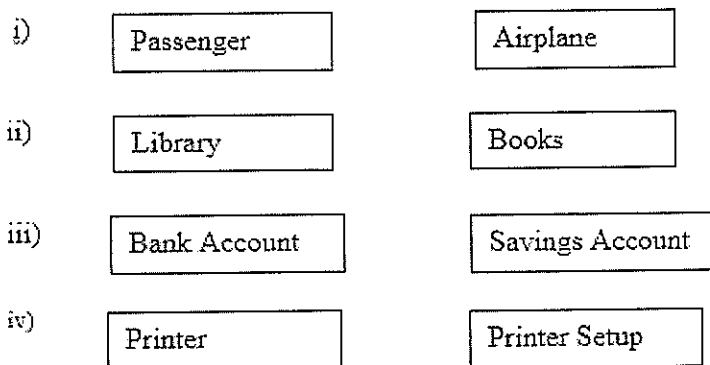
- (a) Consider the following class diagram given below:



Explain all the relationships between the pair of classes of the class diagram.

[3 marks]

- (b) The following figures illustrated a pair of classes for each case.



Explain the most appropriate relationship between the pair of classes and draw a connection between them using the corresponding UML symbol for each case.

[4 marks]

Continued...

- (c) Based on the following Java code segment as shown in Figure 3, convert them into a class diagram.

```
public class Student
{
    private int StudentID;
    private String StudentName;
    private String StudentMajor;
    public double registrationFees();
    protected double examMarks();
}
```

Figure 3. A Sample Java Code

[3 marks]

Continued...

Question 4

- (a) What is the output produce from the Java code as shown in Figure 4

```
public class Student{
    public static void main(String[] args){
        Foundation a = new Foundation();
        Undergraduate b = new Undergraduate();
        CDP c = new CDP();
        a.display("Foundation");
        b.display("FIST");
        b.display();
        a.display();
        c.display(); }
}
class Foundation{
    public void display(){
        System.out.println("Foundation"); }
    public void display(String s)
    {
        System.out.println(s); }
}
class Undergraduate extends Foundation{
    public void display()
    {
        super.display();
        System.out.println("Undergraduate");
    }
}
class CDP extends Undergraduate{
    public void display()
    {
        super.display();
        System.out.println("CDP");
    }
}
```

Figure 4. A Sample Java Code.

[4 marks]

Continued...

- (b) Create a Java class, namely, `FileView` which takes in file path as the program parameter and displays the file content. You are required to write the Java codes along with use the exceptions handling as well. The example output is as depicted in Figure 4.

```
C:\Users\OOP>javac FileView.java

C:\Users\OOP>java FileView C:\Users\OOP\TextFile.txt
TOP2121, Object Oriented Programming file read sample.

C:\Users\OOP>
```

Figure 4. Example Output of `FileView`.

[6 marks]

End of Paper